USE OF CHLOROIODIDE OF ZINC IN PLANT HISTOLOGY

Chloroiodide of zinc has fallen more or less into disuse in the botanical laboratory, perhaps because of its apparent vicissitudes. Since it is unequaled in usefulness in histological work, however, it is advantageous to workers who still believe in the practicability of the old-fashioned hand-section razor to obtain a working knowledge of this reagent.

By the use of the "one solution" mixture (Behrens: 25g $ZnCl_2$, 8g KI, 1.5g I, 8cc water) negative results are often obtained, but when properly prepared and kept from deterioration, the solution may be used for a number of years. To insure uniform results, the two solution mixture, first suggested by NOVOPOKROWSKY, is recommended. Solution *A*, iodine potassium iodide 1:1:100; solution *B*, zinc chloride 2 parts, water 1 part. Stain in solution *A* for a few seconds and then transfer to solution *B*. Keep object moving in a drop of this second solution until a bright blue color is obtained. To hasten the reaction and to intensify the color it sometimes becomes necessary to add a drop of solution *A* subsequent to the treatment with solution *B*. The rapidity of the staining and the intensity of the color obtained often depend on the nature of the membrane. Certain tissues will stain only after prolonged treatment, but most herbaceous material will react very readily.

Since iodine dissolves in water very slowly, it becomes necessary to prepare the reagent some time before it is desired for use. When a section of a potato stem is stained by this method, for example, and the preparation viewed under the microscope, it is seen that the cellulose membranes are a bright blue, lignified, cutinized, and suberized walls a yellowish brown. Young phloem fibers and immature xylem cells, of course, take the cellulose stain. The staining reaction of the sieve tubes of the primary phloem groups is most striking in cross-sections. Their intenser stain and the heavier walls stand out conspicuously in contrast with the phloem parenchyma cells, which stain like ordinary parenchyma of pith or cortex. The pathological anatomist finds the chloroiodide of zinc especially useful in the study of necrotic tissues, since the double staining obtained by this method permits of a more searching inquiry into the nature of the cell wall changes than is possible with a one-sided differential stain like the classic phloroglucin-HCl reagent. The use of the chloroiodide of zinc stain may occasionally call for some patience, but the results obtained warrant and reward it in every case.—ERNST ARTSCHWAGER, *Cornell University.*